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Linked Reading: Digital Historicism and Early Modern Discourses of Race around Shakespeare's Othello

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As Renaissance conceptions of otherness have become a locus of critical study, no work has been more central for making the case about dominant ideologies of race than Shakespeare's *Othello*.¹ Ania Loomba has suggested that "more than any other play of the time, *Othello* allows us to see that skin colour, religion, and location were often contradictorily yoked together within ideologies of 'race,' and that all these attributes were animated by notions of sexual and gender dif-

¹The authors are grateful to the Andrew W. Mellon Foundation's Digital Bridges for Humanistic Inquiry Grant and the University of Iowa's Obermann Center for Advanced Studies for supporting this research. We would also like to thank Ezra Edgerton, Brian Hie, Harry Baker, Zhi Chen, David Cambronero, and Tiffany Nguyen for their assistance.

ference.”² While some critics would moderate that view—pointing more or less toward religion, or gender, or geography—few would disagree about the basic ideology of race that Loomba identifies in the play and the early modern period. Daniel J. Vitkus, for example, focuses more on religious conversion than race, but still argues that “cultural anxieties about ‘turning Turk’” were part of “the fear of a black planet that gripped Europeans in the early modern era as they faced the expansion of Ottoman power.”³ Many others have agreed that the play “repeats and reinforces the already established perception of Turks as the ‘religious threat’ and racial ‘other.’”⁴ A few, like Eric Griffin, have brought the focus on religion closer to home, reading the play as an expression of English nationalism during a time of tension with Catholic Spain, when anti-Catholic, anti-Spanish expression was its own form of othering “ethnocentric discourse.”⁵ But even this broadened critical discussion is based on examination of a limited number of the texts published in early modern England, and it tells only a small part of the story of race in *Othello*.⁶ Digital approaches, however, open up a vast new body of texts for analysis, shifting the ground on which such criticism can take place.⁷

Our work builds from the work of postcolonial scholars, such as Sujata Iyengar, Mary Floyd-Wilson, Emily Bartels, and Jyotsna Singh, who have recently turned back the clock on England’s history of empire by usefully drawing attention to representations of racial and cultural otherness in the work of Shakespeare and his contemporaries. Our research attempts to recuperate an unfamiliar definition of pre-modern race by taking seriously Loomba’s proposal that “vocabularies of race” in Shakespeare’s time were composed of a “historical, geographical, and social layering of racial ideas and languages.” To peel back these “layers” of discourse, critics such as Richmond Barbour (2003), Su Fang Ng (2006), and Robert Markley (2006) have examined early modern England’s interaction with geographical regions such as East Asia and the Near East, and Ng specifically calls for a turn to a “global Renaissance,” moving beyond the scope of the New World and the Mediterranean world so as to reanimate lost, ignored, or unfamiliar “vocabularies of race” that may come to challenge our postcolonial preconceptions.

²Ania Loomba, *Shakespeare, Race, and Colonialism* (Oxford: Oxford UP, 1989), 93.

³Daniel J. Vitkus, “Turning Turk in *Othello*: The Conversion and Damnation of the Moor,” *Shakespeare Quarterly* 48 (1997), 146.

⁴Filiz Barin, “Turks as ‘the Other’ in the Early Modern Period,” *Journal of the Midwest Modern Language Association* 43 (2010), 39.

⁵Eric J. Griffin, “Un-Sainting James: Or, *Othello* and the “Spanish Spirits” of Shakespeare’s Globe,” *Representations* (1998), 59.

⁶We also draw upon the work of Jane Hwang Degenhardt in *Islamic Conversion and Christian Resistance on the Early Modern Stage* (Edinburgh: Edinburgh University Press, 2010).

⁷See also: Katherine Bode, “The Equivalence of ‘Close’ and ‘Distant’ Reading; or, Toward a New Object for Data-Rich Literary History,” *Modern Language Quarterly* 78, no. 1 (2017): 77-106.

Using digital techniques to expand our textual frame of reference to include tens of thousands of Renaissance books in many ways affirms the claims of Shakespeareans interested in adding new layers to England's worldview, but does so by shifting our frame of reference beyond the narrow confines of the canon. Our method establishes textual scale as a structuring principle of geographical, spatial scale in studying the pre-modern world: the more texts we consider, the broader and more complex England's worldview appears. By testing their insights at a large scale, our analyses confirm the readings of previous Shakespeareans but in a surprising way. Our results suggest that geographical, ecological, and humoral reading strategies, which currently represent a fairly small niche of Shakespearean criticism, are equally as important in defining the early modern discourse of race as the widely-accepted readings that understand plays like *Othello* through the lens of skin color or religion. We suggest that these results introduce alternative definitions of early modern race in which geographical and spatial variables were at least as important as more readily recognizable factors such as skin color and anatomy in determining conceptions of race in Shakespeare's time.

How do we assess the meaning of race when our field of vision is not merely a handful of canonical plays, scholastic treatises, and travel narratives, but tens of thousands of sermons, geographical atlases, navigational treatises, mathematical handbooks, broadsides, romances, royal proclamations, and systematic theologies? Our approach has been to combine digital techniques in a methodology we call 'Linked Reading' that embeds topic models and vector space models within historical book networks, allowing us to explore both the language associated with race in texts that mention Moors and the extensive networks of booksellers, printers, and publishers who produced these texts. For *Othello*'s earliest audiences and readers, as we will show, discussions of "race" could range across multiple topics and be motivated by a variety of interests—trade, geography, militarization, the body, sex, religion, globalism, the passions. Our results suggest that the pre-modern idea of race was structured by a logic of place as much as by logics of skin color. Across the wide range of texts about race and ethnicity in Shakespeare's England, a dominant thread was that geography, and not necessarily skin color or the body, was a key factor in shaping how space, landscape, latitude, climate, and a location's flora and fauna defined a culture, its people, and their bodies. In its initial printing and subsequent century of republication and reception, we will argue, *Othello* yoked these threads together in a way that was more unusual than existing criticism would suggest. Indeed, if Shakespeare scholars have largely read *Othello* as a representative text on early modern race, our analysis suggests instead that the text was atypical in its mobilization of a racial vocabulary. We hope to use this work to tell a very different story about the multiple discourses of race that helped motivate *Othello*'s earliest publications

and that the play itself only later came to define.

For this inquiry we turned to two discrete digital humanities projects, "Global Renaissance" and "Shakeosphere". The projects use different but related datasets, and integrating them to investigate a single research question gives us a powerful new perspective on the texts contained in each. Global Renaissance uses the Latent Dirichlet Allocation (LDA) and Word2Vec algorithms to mine the 25,363 text corpus of Early English Books Online (EEBO) / Text Creation Partnership (TCP) for terms and concepts that have a high likelihood of occurring together.⁸ Shakeosphere, by contrast, draws on the bibliographic records in the English Short Title Catalogue (ESTC) of nearly half a million works published in England, Scotland, Ireland, and the Americas, before 1800 and uses quantitative network analysis to study the connections between people, places, and books. To put it simply, Global Renaissance studies the topics composing the early modern textual discourse, while Shakeosphere studies the people responsible for creating and selling those texts. To examine the networks of meaning in *Othello*, we built a new system that would link the projects and allow investigators to pivot between the two approaches and datasets. Starting with all the topics from works that mention "Moors" in Global Renaissance, for example, we can zero in on a particular publication in the topic, like *Othello*, and then pivot to Shakeosphere to see the network of other books and people closely associated with that work. Conversely, we can start with a significant publication network in Shakeosphere—a group of publishers, printers, and booksellers who have published a text of interest to us—and then pivot to Global Renaissance for analysis of the most prominent topics in works produced by this network.⁹ Any given text yields dozens of topics, and any given topic is constituted by a network of hundreds of texts, authors, publishers, and booksellers.

The linked system we have built does not generate answers to questions like "what did the phrase 'valiant Moor' really mean to Shakespeare and his contemporaries?" But it allows us to approach such questions from multiple perspectives and constantly shifting angles of vision, while leveraging the distinct strengths of each dataset and connecting them in ways that minimize their limitations.¹⁰

⁸David M. Blei, "Probabilistic Topic Models," *Communications of the ACM* 55 (2012), 77-84; and "Topic Modeling and Digital Humanities," *Journal of Digital Humanities* 2 (2012).

⁹For a similar methodology in the nineteenth century context, see: Ryan Cordell, "Reprinting, Circulation, and the Network Author in Antebellum Newspapers," *American Literary History* 27.3 (2015).

¹⁰For critiques of EEBO, see Ian Gadd, "The Use and Misuse of *Early English Books Online*," *Literature Compass* 6 (March 2009): 680-692; Diana Kichuk, "Metamorphosis: Remediation in *Early English Books Online* (EEBO)," *Literary and Linguistic Computing* 22, no. 3 (2007): 292-303; David McKitterick, Not in STC", *The Library* 6 (2005): 178-94 and Stephen Tabor, "ESTC and the Bibliographical Community," *The Library* 8 (2007): 367-86.

As Ian Gadd has noted for example, EEBO is a “remarkable scholarly tool”¹¹ when used properly, but it can offer the “illusion of comprehensiveness” to users who do not realize what it has left out.¹² Namely, for the period 1473-1700, EEBO does not include 27% of the items listed in the ESTC (in either full text or facsimile), and although EEBO draws on ESTC metadata to construct its own records, it has heavily edited that data, removing information about collations, Stationer’s Register entrances, while creating no “formal mechanism for synchronising data between the two sources.”¹³ Our system not only offers this mechanism, but leverages it as an analytical tool that allows us to move from the thematic connotations of a specific Shakespearean usage, to the broader topical trends in writing about Moors, to the print networks that brought those texts into being, and back again. Taken together, these methods can help us understand not only what *Othello*’s construction of race may have meant during the time of its initial 1604 performance, but also why race suddenly became a hot commodity in Quarto and Folio nearly twenty years later, and how the racial logic between those publications may have differed.

Linked Reading in *Othello*

At every stage, the process of Linked Reading involved interpretive *work*, as the researchers puzzled over results, debated them, read, recalibrated tools, puzzled over the relationship between our findings and the existing scholarly and primary literature, debated some more, and finally agreed on an argument that we think can make sense of it all. We began by running LDA and word2vec on all documents in the 25,363 text Early English Books Online (EEBO) / Text Creation Partnership Phase I corpus, and specifically on the 14,708 paragraphs (from 3,147 texts) in the EEBO corpus mentioning all variants of the word “Moor,” including Shakespeare’s plays and editions of *Othello*.

LDA, as David Blei has defined it, “topic models find the sets of terms that tend to recur together in the texts.”¹⁴ Performed well, topic modeling “is good at revealing quiet changes”¹⁵ across historical periods writ large, which might not be registered in a reading of canonical texts alone. In this sense, Underwood and Goldstone suggest that “topics may even indicate a discourse in Foucault’s sense”

¹¹Gadd, “The Use and Misuse,” 688-89.

¹²Gadd, “The Use and Misuse,” 686.

¹³Gadd, “The Use and Misuse,” 686.

¹⁴Blei, “Topic Modeling,” 2.

¹⁵Blei, “Topic Modeling,” 2.

and topic modeling may be a step toward a more complete discursive methodology.¹⁶ We have refined the LDA algorithm to increase its historical sensitivity in three ways. First, we created a search index that reversed the “bag of words” pre-processing step by resituating the words in a topic model back in their local textual context of the paragraph. Second, we divided our corpus by two document scales - the full text and the paragraph - in contrast to the conventional assignment of a document with an entire book. Our third refinement was to cluster groups of topics with similar words across many replicates of our LDA tests using cosine similarity to compare particularly stable topics that recur over independent runs.¹⁷ We paired our LDA topic models with word embeddings, using word2vec, to provide a second way to study word relationships in our Moor corpus.¹⁸ Word embeddings are most suited for word-level semantic analysis, whereas topic modeling is more suited to document-level word relationships.¹⁹ We paired these two approaches as a way to compare word-level and document-level networks of meaning.²⁰

To pinpoint the broader debates that were circulating when *Othello* was written, first performed, and first published, we divided the EEBO corpus into subsets of pre-performance (1473-1604) and pre-publication (1473-1622 and 1473-1623) texts that mention “Moor,” as well as post-publication texts (1623-1700). Slicing the corpus in this way allowed us to identify the topics and word vectors for the period up to and including the probable first performance in 1604, the publication of the 1622 quarto (Q) edition of *Othello*, the 1623 folio (F) edition, and these texts’ afterlife until the end of the seventeenth century. The results of our tests were visualized in the following vector space (Figure 1), with topics clus-

¹⁶Blei, “Topic Modeling,” 2.

¹⁷To visualize our LDA models, we significantly revised Carson Sievert’s LDAVis library, and Jason Chuang’s Termite library. For this, see: Carson Sievert and Kenneth E. Shirley, “LDAVis: A method for visualizing and interpreting topics,” In *Proceedings of the workshop on interactive language learning, visualization, and interfaces* (2014); Jason Chuang, Christopher D. Manning, and Jeffrey Heer, “Termite: Visualization techniques for assessing textual topic models” *Proceedings of the International Working Conference on Advanced Visual Interfaces*, ACM, (2012).

¹⁸For an overview of word embeddings in the context of the digital humanities, see: Ben Schmidt, “Vector Space Models for the Digital Humanities.”

¹⁹Tomas Mikolov, Kai Chen, Greg Corrado, and Jeffrey Dean, “Efficient estimation of word representations in vector space,” *arXiv preprint: 1301.3781* (2013); Quoc V. Le and Tomas Mikolov, “Distributed Representations of Sentences and Documents,” *ICML*, vol. 14 (2014); Matt J. Kusner, Yu Sun, Nicholas I. Kolkin, and Kilian Q. Weinberger, “From Word Embeddings To Document Distances,” *ICML*, vol. 15 (2015); Peter D. Turney and Patrick Pantel, “From frequency to meaning: Vector space models of semantics,” *Journal of artificial intelligence research* 37 (2010): 141-188; Dat Quoc Nguyen, Richard Billingsley, Lan Du, and Mark Johnson, “Improving topic models with latent feature word representations,” *Transactions of the Association for Computational Linguistics* 3 (2015): 299-313.

²⁰For topic modeling, we adapted the Python library Gensim, and for word2vec we used Google’s open source TensorFlow machine learning library.

tered in a two-dimensional PCA projection in the middle, the term-topic list on the right pane, and the document retrieval interface for the topic on the left pane. When we wanted to compare the term lists across different topics, we employed the term-topic matrix visualization (Figure 2) to align multiple topics at once.

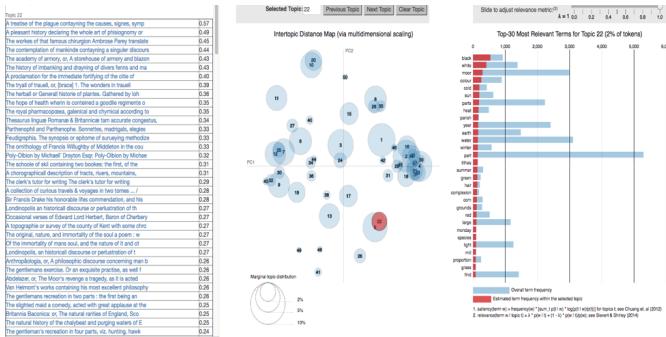


Figure 1. LDA and Document Retrieval Interface.



Figure 2. Term-Topic Matrix and Document Retrieval Interface.

We structured our tests in this manner to evaluate Leah Marcus' suggestion that the Q and F versions of Shakespeare's play "mean differently," especially in the Folio's much more explicit and pernicious construction of racial difference as an indelible bodily trait.²¹ Only in the folio, for example, does Roderigo describe

²¹ Leah Marcus, "The Two Texts of Othello and Early Modern Constructions of Race," *Textual Performances: The Modern Reproduction of Shakespeare's Drama* (Cambridge: Cambridge University Press, 2004), 22.

Desdemona “in the gross clasps of a lascivious Moor,” and only in the folio does Othello describe Desdemona’s name as “black / As mine own face” (3.3.384-5). Whether Shakespeare added the passages later or they were cut for an earlier performance before making their way back into Quarto publication, the Folio insistently calls attention to “Noses, ears, and lips” (4.1.39) and other bodily markers of racial identity in a way that the earlier Quarto text did not. As we shall see, the 1622 Quarto and 1623 Folio editions are associated with different groups of topics, and this is an important part of the story we have to tell.

Our LDA models from EEBO texts preceding the printing of *Othello* produced a range of topics, including some that conform to a standard story of race, sexuality, and religion in the early modern world. These “conforming” topics do not necessarily reveal new racial paradigms, but they do suggest that our method can consistently reproduce the findings of previous scholars and is at least not wildly off the mark. Figure three, for example, shows that a range of topics emerge in the multiple temporal tiers of the “Moor” discourse before the printing of *Othello* in 1622. The figure presents the term-topic matrix that represents two topics from runs of the LDA algorithm performed upon all of the texts before 1604 and 1622, respectively. The terms listed in the selected topics are the words that have a high probability of co-occurring in the “Moor” texts; the radius of the node represents the probability of the word occurring in the topic; and the order of the word in the list shows its relative frequency in the documents, with high frequency words listed toward the top of the list. In these topics, the most probable word “love” occurs together in paragraphs with “death,” “passion,” “wife,” “torture,” “faith,” and “daughter,” a vocabulary that conflates romance, sexuality, and pain.

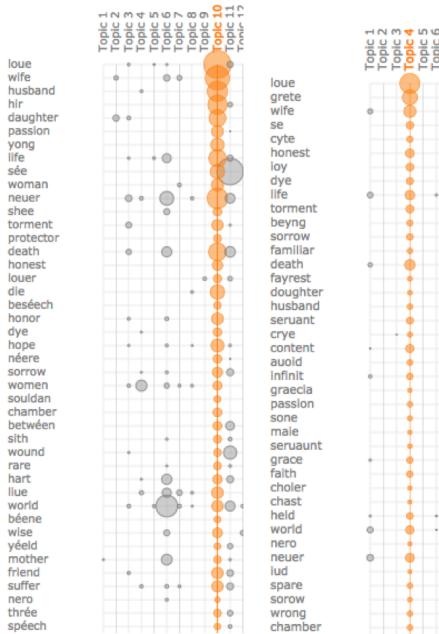


Figure 3. Sexuality and Romance topics, pre-1604 (left) / 1622 (right).

Using our search index to identify and retrieve the EEBO documents associated with these topics, we find that they draw on texts including Christopher Marlowe's *Tamburlaine* (1590), John Pory's popular translation of Leo Africanus's *Geographical Historie of Africa* (1600), and John Robert's chivalric romance, *Honor's Conquest* (1598). Shakespeare's *Merchant of Venice* (1600) also earns a place in these topics, thanks to the Prince of Morocco's wooing of Portia and the following exchange between Lorenzo and Lancelot:

Jessica:he says you are no good member of the commonwealth,
for in converting Jews to Christians you raise the price of pork.

Lorenzo: I shall answer that better to the commonwealth than you
can the getting up of the Negro's belly. The Moor is with child by
you, Lancelot.

Lancelot: It is much that the Moor should be more than reason, but
if she be an honest woman, she is indeed more than I took her for.
(III.v.31-37)

This strong association of words signifying gender, sexuality, and race co-mingling within topics illuminates the “historical dependency between patriarchy and racism” that Loomba describes in *Gender, Race, and Renaissance Drama*, where the staging of racial and sexual difference in *Othello* and other plays serves to construct colonial authority.²² Griffin has argued that early modern European anxieties over racial miscegenation are already prevalent in the period, especially in such contexts as the Spanish emphasis on “purity of blood.”²³

We may also see anxieties about racial miscegenation reflected more broadly in topics like figure four’s “family / slave / monster” topic (labeled as “Topic 15”), which is drawn from works published before 1622.

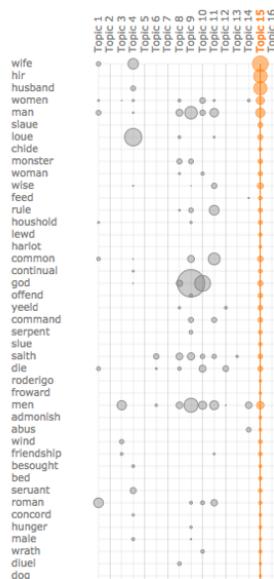


Figure 4. Family / Slave / Monster Topic, Pre-1622.

This topic includes works such as *The Most Famous History of the Seven Champions of Christendom*, by Richard Johnson (1596), Edward Topsell’s *History of Four Footed Beasts* (1607), Robert Car’s 1600 translation of *The Mahumetane or Turkish Historie*, and a few “literary” romances, including *Orlando Furioso* (translated 1591) and Claude Colet’s *Famous, Pleasant, and Variable History of Palladine of*

²² Ania Loomba, *Gender, Race, and Renaissance Drama* (Oxford: Oxford UP, 1989), 45.

²³ Eric J. Griffin, *English Renaissance Drama and the Spectre of Spain* (Philadelphia: University of Pennsylvania Press, 2009), 10.

England, which was translated and published in English in 1588. The upshot of the topic is that such texts are highly likely to include words like “harlot,” “lewd,” “slave,” “Roderigo,” and “monster” in close proximity to the word “Moor.”

The topics that precede *Othello*'s printing across all time thresholds also confirm that religion stands as an abiding concern in English thinking about Moors, as studies by Griffen, Vitkus, and others have argued. Figure five, for example, shows representative “religion” topics from the pre-1604 and pre-1622 subsets. In both years, the “religion” topic reveals intermingled discussions of “Turk,” “Christian,” “Moor,” “Jew,” “Arabian,” “Persian,” and “Religion,” although the pre-1604 topic draws almost exclusively on sermons, religious publications, and natural histories, while the pre-1622 topic includes many “literary” texts, including John Webster’s *The White Devil* (1612), John Harrington’s translation of *Orlando Furioso* (1591), Christopher Marlowe’s *Tamburlaine* (1590), and Thomas Kyd’s *The Tragedy of Soloman and Perseda* (1592).

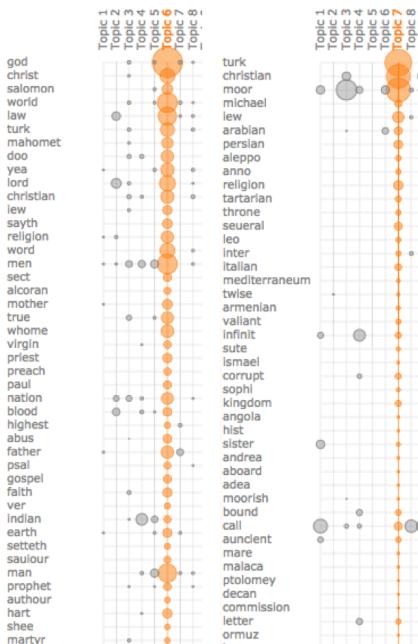


Figure 5. “Religion” topics, Pre-1604 (topic 6, left) / 1622 (topic 7, right).

Terms such as “Italian,” “Turke,” “Mediterraneum,” and even “Indian” suggest a broad but familiar cultural geography, even as the appearance of “Angola” in the

latter “religion” topic may suggest the tendency to push confessional loyalties and tensions into an expanding global theatre.

Lest we be tempted to read these results as merely confirming what scholars already knew, however, it is worth noting a result that came as a distinct surprise: such topics are a clear minority of the ones generated by our LDA analysis. In the pre-1622 corpus (everything up to, but not including, *Othello*), we find eleven topics on geography and navigation and four topics on trade and resources, in addition to the five topics on sex/the body/romance, eleven topics on religion, five on political organization, and five on military affairs (figure six).

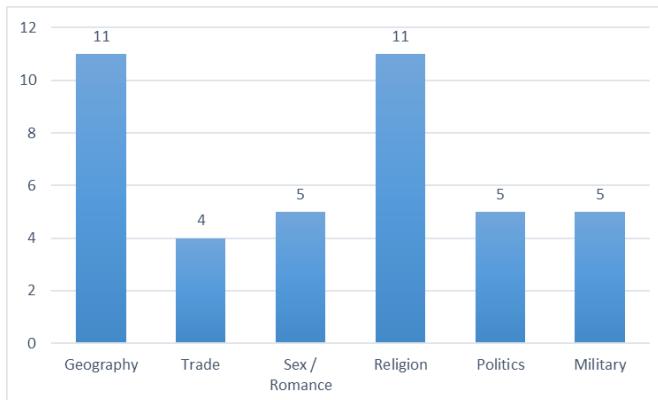


Figure 6. Summary of Topics, Pre-1622 EEBO Corpus.

We define “geographical” topics as ones where the words that have the highest probability of occurring together include place names (Egypt, Ethiopia, Poland, etc), topographical terms (island, desert, cape, etc), and technical navigational language (anchor, boat, sail, etc). Topics on trade and resources are defined by materials like “tree,” “rice,” “grain,” and “wheat.” The topics shift a bit by decade, but across all our LDA runs, geography, trade, and material resources always represent the most common themes, with geography especially outstripping any other cluster in prominence. In other words, it seems clear that geography, trade, and location-specific topics, as much as skin color, sexuality, or religion, shaped the perception of Moorish identity and the likely reception of *Othello*. Indeed, if a play about Moors evoked “hot button” issues in the England of 1604 when *Othello* was probably first performed, these topic models imply that trade and geography would have rivaled religion and bodily difference as the most characteristic linguistic markers of those plays.

Indeed, when we turn to the LDA topics that include the first two editions of *Oth-*

ello (figure seven), we surprisingly find that the play, in quarto and folio, occurs almost exclusively in “geographical” topics, rather than in topics on sexuality, the passions, or the body. In fact, 85.7% of topics that include at least one version of the play are geographical, global, or naval in nature.

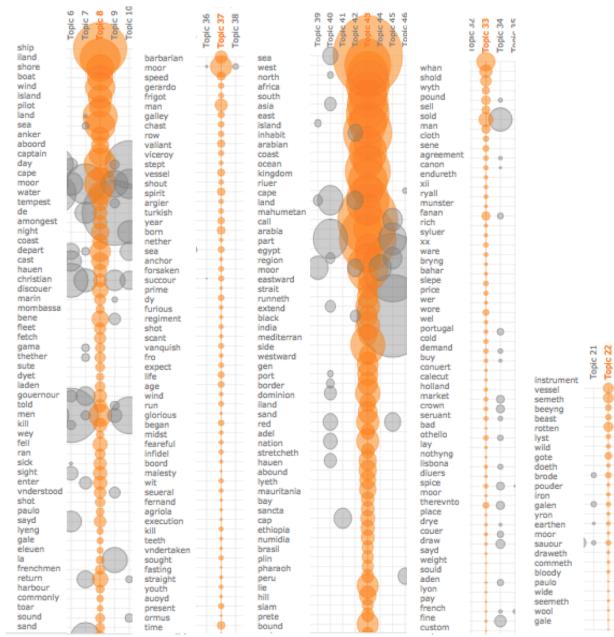


Figure 7. LDA Topics that include Othello, Pre-1623.

Othello is a captain, he sets sail for Cyprus, and, according to the LDA algorithm’s probabilistic modeling, the play’s language has the highest likelihood of sharing common language with technical texts on navigation, global space, discovery, and trade. Indeed, here *Othello* begins to look like a true outlier, since at the document level, *Othello*’s plaiting together of geographical, naval, and militaristic language aligns it more closely with technical texts, travel guides, news sheets, and corantos than with contemporary plays, literary romances, or the kinds of cultural ethnographies sometimes offered up in sermons and polemical tracts. Figure eight shows LDA topics on geography and landscape that find a shared vocabulary linking Shakespeare’s *Othello* and Samuel Purchas’ famous text on global travel, *Purchas his Pilgrimes* (1613), alongside texts on “cosmographie,” surveying, and chorography.

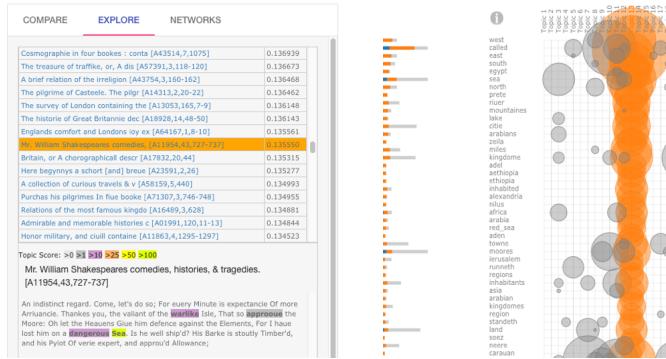


Figure 8. LDA Topics that include Othello.

Even more unexpectedly, the converse also holds true: the early publications of *Othello* are not part of the cluster of dramatic and literary texts, like Lust's *Dominion* (1600) and even Shakespeare's earlier play *Titus Andronicus* (1594), which contribute to topics on the passions, female sexuality, and religion (figure nine).



Figure 9. “Moor” Topic Composed of Literary Texts.

To verify the findings of our LDA tests, our word2vec analysis shown below shows word-level semantic relationships without taking documents into account. We used cosine similarity to measure the distance between word vectors, and then principal component analysis (PCA) to flatten the high dimensional space into a three-dimensional projection. Word nodes that are closer in the vector space have a higher probability of occurring in the same semantic context, while more distant words have a lower probability of occurring together. Based on this word-level analysis (figure ten), we can see that the discourse of “Moores” in the EEBO corpus from 1500 through 1623 exhibits precisely the same naval, mercantile, and

geographically diverse vocabulary, including words such as “ships,” “seas,” “trade,” “fleete,” “merchants,” “traffique,” “indias,” and “marchandize”, as we have seen in the document-level analysis of the LDA topics containing *Othello* alongside texts on global travel and shipping.

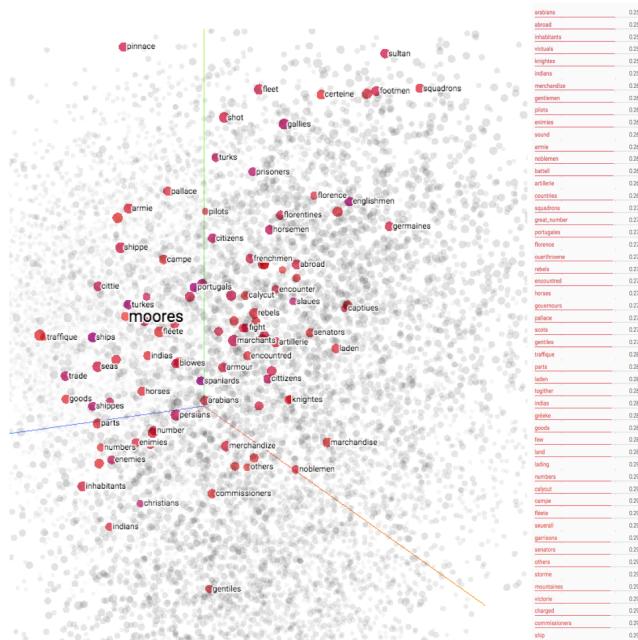


Figure 10. Word2Vec Model of “Moores” (EEBO Corpus, 1500-1623).

Based on the LDA models’ alignment of *Othello* with a navigational discourse, and the word2vec models’ identification of the keyword “Moor” with the same naval and trade vocabulary, our results suggest that at the time of its initial publication *Othello* participated in the early “Moor” discourse on a geographical, navigational, and naval register that was at least as coherent as the terrain of politics, religion, or the body.

Even without their strong association with *Othello*, these “geographical” or “global” topics would seem to be significant to understanding the play, because they are surprisingly stable — across all time thresholds, and within multiple replicates of the LDA tests, the same clusters of words appear, defining geography and space in proximity to passages that mention Moors. These geographical topics reveal that the very notion of “geography” in the period is complicated,

with two distinct models of England's worldview coming into focus, one marked by European places, and the other by global spaces.

First, a strong trend defines a proximate vision of European *place* that maps neatly onto the political and religious fault lines of a familiar continental Renaissance. Geographical contexts used to define Moors in the topics shown in figure eleven, from LDA runs performed on pre-1604 and pre-1623 EEBO texts, include "Spain," "Portugal," "Granada," "French," and "England," along with the more distant "Affrica" and "Turk."

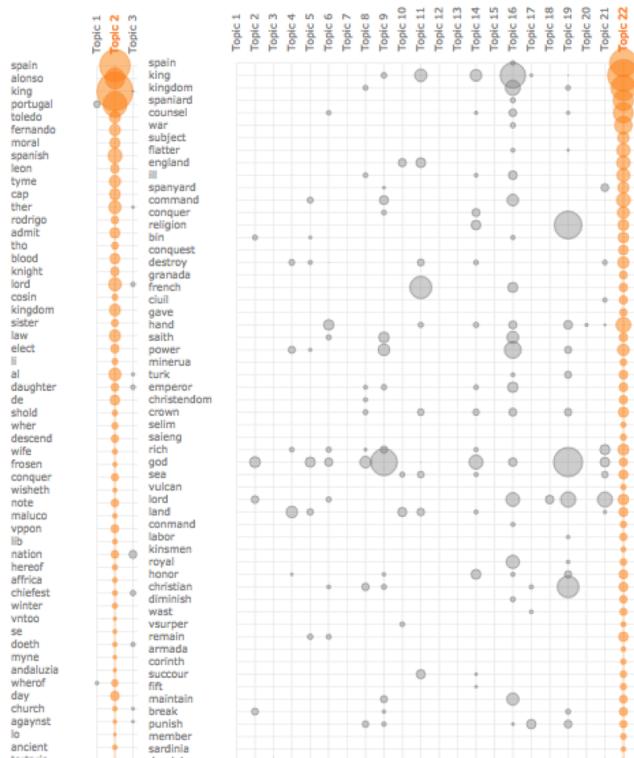


Figure 11. Topics on Europe, the Mediterranean and the “Turk,” Pre-1604 (left) / 1623 (right).

Less familiar is a second tier of geographical topics characterized by an “equinoctial” imagination of Moors that is markedly more technical than the cultural conflicts described by the first tranche of European topics. Here we find clusters of words related to space and climate.

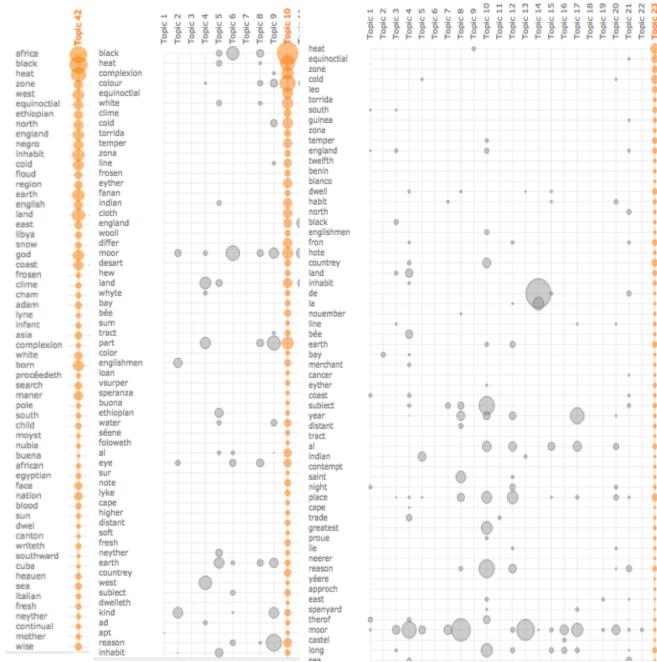


Figure 12. Complexion/Equinoctial/Global Geography Topics, Pre-1604 (left) / 1622 (center) / 1623 (right).

²⁴*Oxford English Dictionary*, 2nd ed., s.v. “equinoctial.”

gal,” “Benin,” “Peru,” Malabar,” “Persia,” “Albania,” “America,” and “Florida” are all specific locations populating this grid of global space. What’s significant here is that the cartographical discourse of equinoctial lines, poles, and zones explodes outwards from the narrow confines of the local European topics on the “Moor.”

A word2vec evaluation of the semantic range of “equinoctial” in the EEBO corpus from 1500 to 1623 demonstrates an analogous geographical vocabulary of spatial markers and a diversity of global place names, as seen in figure thirteen.

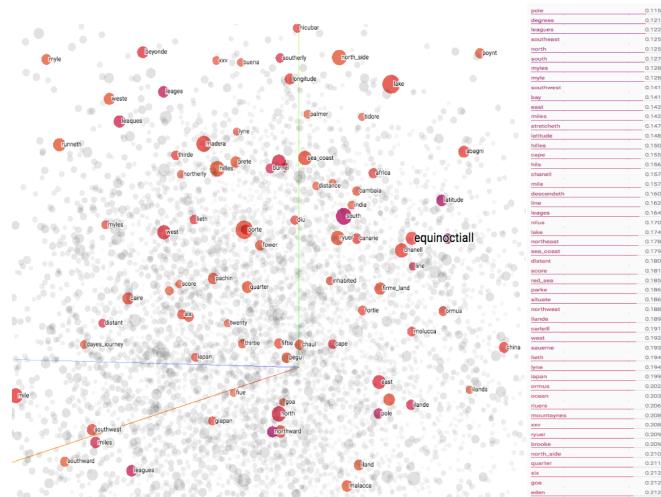


Figure 13. Word2Vec Model of “Equinoctial” (EEBO Corpus from 1500-1623).

The terms of these global topics also differ substantially, shifting from a historical register of European political and cultural conflict to the more technical vocabulary of how space can be theorized and organized in a mathematical way. Climate (rather than ethno-religious conflict) binds the disparate geographies of the “equinoctial” topics together. The repetition of the words “clime,” “zone,” “heat,” “cold” and “torrida” describes a logic of climatological zones and bands as the tissue binding the wide range of otherwise unrelated regions in the New World, Europe, Africa, and Asia into a cohesive spatial amalgam. We see this reasoning in familiar texts such as Thomas Hariot’s *Briefe and True Report*, which claims that Virginia is a worthy place to explore and populate, since it shares the “nature of the climate, being answerable to the Iland of Japan, the land of China, Persia, Jury, the Ilandes of Cyprus and Candy, the South parts of Greece, Italy, and Spaine, and of many other notable and famous countreis.”²⁵ For Hariot, the

²⁵Thomas Hariot, *A briefe and true report of the new found land of Virginia of the commodities and*

range of agricultural commodities capable of being grown in Virginia could be inferred from the shared latitude, and therefore climates, of global regions, with “suger canes” likely to be successful, “seeing that they grow in the same climate, in the South part of Spaine and in Barbary.”²⁶ Silk also was a promising cash crop since it “growtheth in Persia, which is in the selfe same climate as Virginia, of which very many of the silke workes that come from thence into Europe are made. Here of if it be planted and ordered as in Persia” and “will rise as great profite in time to the Virginians, as there of doth now to the Persians, Turkes, Italians and Spaniards.”²⁷ The topics reflect Hariot’s understanding of a globe structured by latitude, where regions halfway around the world and their practices could be bound together in a single breath based on climate rather than proximity, shared culture, or radical otherness. The underlying logic of these geographical topics is not “race” understood as a function of the body’s physiology, and taken as a whole the language of skin color and anatomical difference exists faintly.²⁸

The “equinoctial” definition of space in England’s nascent globalism is not limited to the promise of a region’s flora; “complexion” and “temper” also appear as dominant terms in this range of geographical topics. Mary Floyd-Wilson’s work on “geohumoralism” and ethnicity in the Renaissance gives us a useful means to understand the link between geography, complexion, and temper, specifically as these terms relate to the depiction of Moors in early English texts.²⁹ Floyd-Wilson describes an early modern system of “regionally framed humoralism” that constituted an early modern “scientific ethnology.”³⁰ According to this early modern humoural science, the “environment...necessarily produced” peoples “of all climates,” and Floyd-Wilson suggests this made the body and its humoral system the basis of a “somatic” framework that gave coherence to the geographical organization of the world.³¹ Our topic models provide broad evidence for such a “geohumoralist” reading, but in a far more radical way than even Floyd-Wilson’s exegeses would suggest. In our topics, the “complexions” and “tempers” associated with a given climate or location move beyond the plane of the body, physiology, ethnicity, and skin color. Embedded in a network of cartographical concepts, “complexion” and “temper” serve as geographical terms in the Renaissance mind, and thus the “equinoctial” imagination helped define the idea of race as a spatially inflected formation.

of the nature and manners of the naturall inhabitants (Frankfurt, 1590), 31.

²⁶Hariot, *A briefe and true report*, 12.

²⁷Hariot, *A briefe and true report*, 7-8.

²⁸See Mary Floyd-Wilson, *English Ethnicity and Race in Early Modern Drama* (Cambridge: Cambridge UP, 2003), 2.

²⁹Floyd-Wilson, *English Ethnicity and Race*, 2.

³⁰Floyd-Wilson, *English Ethnicity and Race*, 3-4.

³¹Floyd-Wilson, *English Ethnicity and Race*.

In the Renaissance mind, then, the “equinoctial” imagination helped define the idea of race in a fundamentally spatial way because “complexion” and “temper” were shaped by the geography of a specific place. Using word2vec in figure fourteen to examine EEBO from 1500 to 1623 at the word level demonstrates that “complexion” defines a phenotype modulated by “physicke,” “constitution,” “melancholy,” “tempers,” and the “temperature” of the local environment, far more than an immutable genotype. Indeed, the “blacke_moore” pairs with “behavior,” rather than words associated with the body or skin color.

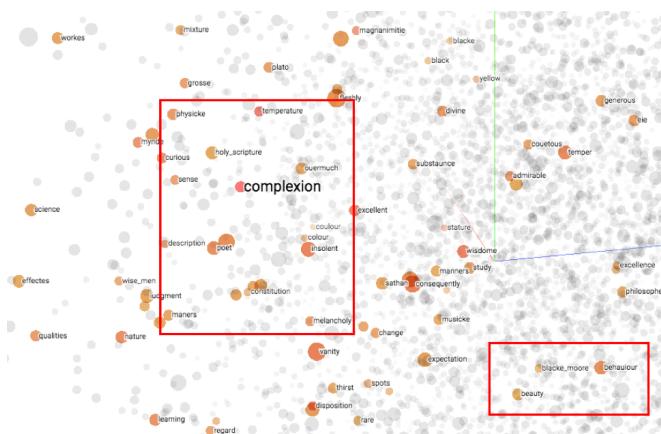


Figure 14. Word2Vec Model of “Complexion” (EEBO Corpus from 1500 to 1623).

Turning back to *Othello*, we see this spatialized sense of “complexion” clearly when Iago casts Desdemona’s desire for the Moorish general as a deviation from “her own clime, complexion, and degree, / Whereto we see in all things nature tends” (III.iii.235-6). And indeed, a word embedding of “complexion” after the publication of the play (figure fifteen) shows that Othello himself comes to contribute to the very definition of the idea, in a closer relationship with “tempers,” “appetites,” and “affections,” than the vocabulary of “blackness.”

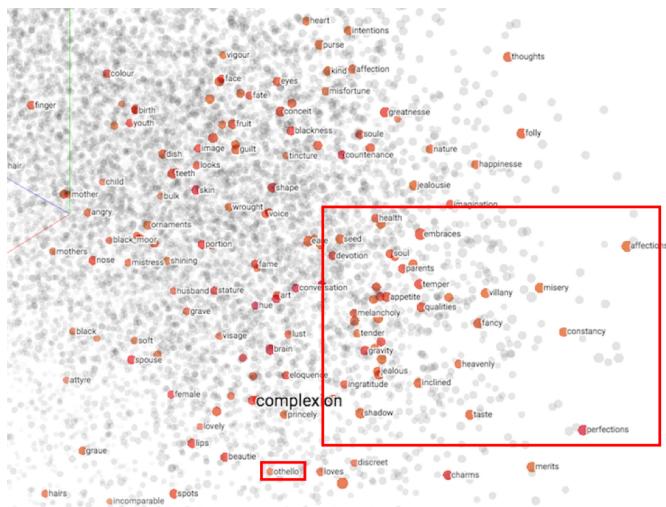


Figure 15. Word2Vec Model of “Complexion” (EEBO Corpus from 1623-1700).

In the topics and word embeddings where it appears, “complexion” gestures toward its Latin root *complectere*, indicating a pre-modern idea of race as the plaiting or intertwining of many variables, including landscape, latitude, climate, and local flora and fauna, in a way that is made legible by the humoral body. See for example, figure sixteen, below, where the proximity of “black,” “Indian,” “white,” “complexion” might incline us to read this as a cluster of words about the body:



Figure 16. Complexion Topic, Pre-1622.

Indeed, some of the texts composing this cluster seem, at first glance, to exhibit the crudest kind of racial essentialism, as is the case in Pietro Martire d'Anghiera's *The history of travayle in the West and East Indies*, which argues that men differ in skin color not because of differences in weather or temperature, but because "God hath so ordeyned it."³² But ultimately this leads the author to understand racial complexion as something as mysterious as the fabric of nature itself, rather than immediately legible on the body. Racial difference offers "further occasions to Philosophers to searche the seccretes of nature, and complexions of men, with the novelties of the newe worlde."³³

Our algorithm associates *Othello* more strongly with this global perspective than with more purely local concerns or racial verities. But why does complexion in *Othello* look so different from most other contemporary plays that include

³²Pietro Martire d'Anghiera, *The history of travayle in the West and East Indies*, trans. Richard Eden (London, 1577), sig. A4v.

³³

passages about Moors? Why does it, in fact, look so different even from itself? Zooming in on the distinctions between the Quarto and Folio by running LDA on the pre-1623 corpus, we begin to see that all the aspects of *Othello* that set it apart from other “Moor” plays are more pronounced in Quarto than in Folio. Although both printings of the play occur together in many LDA runs, the Quarto seems to be much more of its moment in this sense and less engaged with the ethnographic discourse that comes to define “the Moor” generally and *Othello* in particular across the long span of English literary history represented by the entire EEBO corpus. When we step back and look at LDA runs that represent the entire period of the EEBO corpus, the Folio version of *Othello* is prominent in topics such as these:

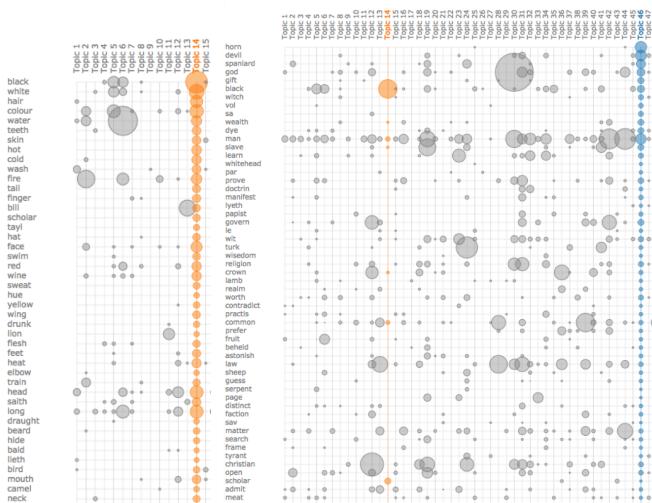


Figure 17. *Othello* in “Moor” Topics Across Entire EEBO Corpus, 1473-1700.

These topics take us back to a fairly familiar understanding of race in the play, in which difference is corporeal, demonized, and associated with England’s Catholic rivals. As we shall see later, this in fact becomes the dominant way of seeing the play in its longer reception history. But the Quarto has essentially disappeared from the discourse defining Moors in this paradigm — unlike the Folio *Othello*, the LDA does not see the Quarto contributing to such topics in any statistically significant way. To get a sense of the difference, once again, between these topics and the ones where we *do* find the Quarto, here is an example of an earlier topic that includes the first printing:

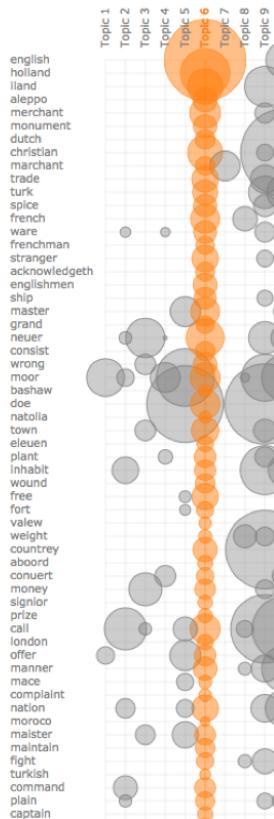


Figure 18. “Moor” Topic including Quarto Edition.

This trade-oriented topic, with terms like “spice,” “ship,” “Holland,” and “ware,” couldn’t be more different from the topics that include the Folio. To understand the gap, we can pivot to the network of printers and publishers that first brought *Othello* to London’s bookstalls in Quarto nearly twenty years after its first performance. Here, we can begin to get a better idea of how the play’s complex temper and its particular global engagements may have helped make it a vendible commodity in 1622, in ways that have become more difficult to see in the following years.

Othello's Publication Networks

The Quarto *Othello* was printed in 1622 by Nicholas Okes and published by Thomas Walkley. Scholars have shed a good deal of ink wondering how they gained access to the play and whether it brings us closer or takes us further from Shakespeare's intended text.³⁴ Such questions may ultimately be counterproductive, as Scott McMillan notes, since "all successful Elizabethan plays existed in multiple scripts over their lifetimes, and those that have come down to us in only one version are untypical."³⁵ But we do know that Walkley and Okes, working together or with others, produced *Othello* and four other King's Men plays between 1619 and 1622. By using Shakeosphere to explore the connections between the people and texts related to these works, we can begin to get a sense of their place in the publication networks that produced them.

First, it quickly becomes clear that literary and dramatic texts were somewhat outside the norm for either the printer or publisher. On the network map below, we have highlighted Okes, Walkley, and Shakespeare, as well as the large node in the center, Bernard Alsop. The size of the nodes correlates to the number of publications associated with them. Alsop, for example, is one of the printers that Joad Raymond describes as "having established advantageous economies of scale and operational infrastructures" that allowed them to dominate the market and made them instrumental in developing the English newspaper.³⁶ In the network below, the left-hand side is dominated by publications of news and current events, while the right includes more literary and religious texts. *Othello* sits astride these worlds.

³⁴For an overview of this scholarship see, Scott McMillin, "Introduction," *The First Quarto of Othello* (Cambridge: Cambridge UP, 2001), 1-47.

³⁵McMillin, "Introduction," 41.

³⁶Joad Raymond, *The Invention of the Newspaper: English Newsbooks 1641-49* (Oxford: Clarendon Press, 1999), 33.

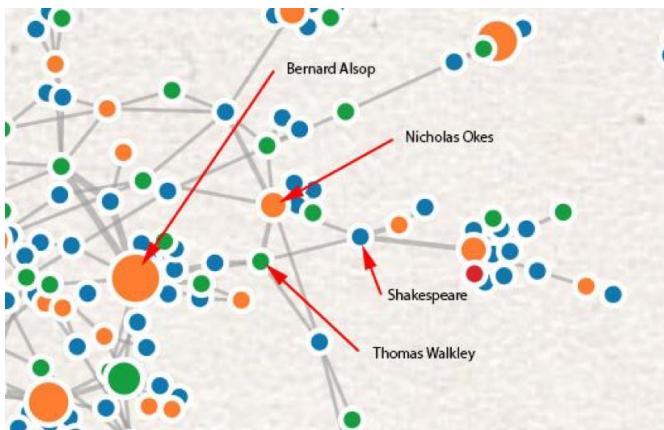


Figure 19. Print Network of Okes, Walkley, and Shakespeare.

Walkley and Okes were jockeying for their own place in the vibrant network that Alsop was coming to dominate alongside Nicholas Bourne (the largest green node in the image above). In this quest Walkley clearly had a star publication — *A Catalogue of Nobility of England, Scotland, and Ireland*, which he reprinted dozens of times. This was not a hoary almanac, but a form of news for an audience interested in state affairs. As Zachary Lesser suggests, “from his location at Britain’s Burse, Walkley was ideally positioned to offer news of Westminster politics to this audience of ‘Paul’s walkers,’ courtiers, and Parliament men, and we should see the literature he published not primarily as his contribution to English letters but as part of this enduring specialty.”³⁷ According to Lesser, *Othello* and Walkley’s other plays thus “reveal that his customers’ interest in mixed government may have derived less from an idealistic desire to transform Parliament into a constitutional institution than from a more immediate and practical concern: England could wage war against Spain only if James called a parliament.”³⁸

Indeed, although many of them do not appear in the full text data we used for our LDA runs, a cluster of Walkley publications in the more expansive network analysis of ESTC metadata clearly share a bellicose stance that would make them strong candidates for topics that associate *Othello* with military matters. Works like John Everard’s *Arriereban* (1618) and Thomas Trussel’s *The Souldier Pleading His Owne Case* (1619) urge continental intervention that will make England a competitive military power in a global theatre. “By armes,” Trussel writes, “Germany is defended from the power of the cruel Turkes...By Armes, the Spaniards

³⁷ Zachary Lesser, *Renaissance Drama and the Politics of Publication: Readings in the English Book Trade* (Cambridge: Cambridge UP, 2004), 159.

³⁸ Lesser, *Renaissance Drama and the Politics of Publication*, 166.

have got in their power the West Indes, and by Armes do they hold the same in obedience to their scepter.”³⁹ Walkley also published the picaresque novel *The Pursuit of the Historie of Lazarillo de Tormez* (1622), about a protagonist who sets out with missionary zeal on a Spanish ship to “open the eyes of Mores, blinded with errors; to sinke and batter the bold and Pyratical Navie; [and] to serue a valiant Captaine.”⁴⁰ The original *Life of Lazarillo de Tormez* (1554), to which this publication was a sequel, has been called “a propaganda gift to powers hostile to Spain.”⁴¹ And Walkley seems to have been so eager to cash in on the sensation it caused in 1622 that he may have had a hand in the work’s translation, coyly noting in the dedication to Robert Stanley (an up-and coming member of the Lords) that he has “strangely recovered” the work from obscurity.⁴² On the network map above, *Lazarillo* is closely associated with a large cluster of “news” publications” that dominate the lower left-hand side.

If *Othello* was newsworthy in 1622, however, it was not only because its militarism tapped into anti-Spanish and anti-Catholic sentiment, as we see from its strong topical association with far flung geographies and with fellow protestant nations such as the Dutch. And significantly, this is where the network of publications associated with *Othello*’s printer are even more informative than those associated with its publisher. Although we may not be accustomed to considering the predilections and business calculations of printers when thinking about the success of a given book, Peter M.N. Blayney notes that Okes would have had significant agency in the publications he produced, since “a small Jacobean printing house was not a clinically efficient book-factory staffed by automata,” and “any printer whose presses were not starved of work have been to exercise his own preferences (both personal and literary) when choosing between available offers of work.”⁴³

Although he is hardly a household name today, Okes was so well known as a provider of timely and sometimes unreliable news about global trade and travel that Ben Jonson inserted a gag about him in *News From the New World Discovered in the Moon* (1620, p. 95). Okes is basically invisible to traditional histories of the period, however. He lacks an entry in the Oxford Dictionary of National Biography, and even Blayney sounds apologetic about discussing the printer in his rigorous and expansive two volume book history, where he notes that “Okes is

³⁹ Thomas Trussell, *The Souldier Pleading His Own Cause* (London, 1619), sig. B4r-v.

⁴⁰ Juan de Luna, *The Pursuit of the Historie of Lazarillo de Tormez* (London, 1622), 3.

⁴¹ Keith Whitlock, “Introduction,” *The Life of Lazarillo De Tormez* (Warminster: Aris and Phillips, 2000), 1.

⁴² Thomas Walkley, “Dedication,” *The Pursuit of the Historie of Lazarillo de Tormez*, sig. A3r.

⁴³ Peter M.N. Blayney, *The Texts of King Lear and their Origins, Volume I, Nicholas Okes and the First Quarto* (Cambridge: Cambridge UP, 1982), 27.

of some interest in the wider context of Jacobean play-printing and can, in several ways, be considered usefully representative of the printers responsible for many of the more important pre-restoration quartos.”⁴⁴

This however is where network analysis clearly allows us to observe something that traditional scholarship has missed, because when we rank all publishers and booksellers by their average number of connections (their degree) between Shakespeare’s birth in 1564 and the first Folio’s publication in 1623, we find that Okes is not really “representative” at all. He is in fact the most connected person in the entire print network during this time:

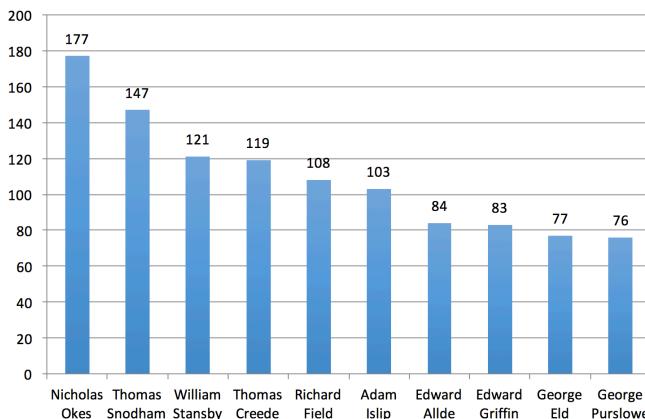


Figure 20. Degree Rank (average connections) of Publishers and Printers, 1564-1623.

In network analysis, “degree” measures the number of connections between one individual and others; “betweenness” measures an individual’s centrality by calculating the number of other individuals who are connected through their mutual relationships with that person. In both measures, Nicholas Okes ranks higher than any other publisher, printer, bookseller, or author between Shakespeare’s birth in 1564 and the publication of the first folio in 1623. What might it mean, in real world terms, to have the highest “degree” of any other publisher or printer during this period? Since Shakeosphere generates an “edge,” or connection, between a bookseller, printer, publisher, or author any time they share space on the same title page or the ESTC bibliographical metadata, a high degree means not only that a printer produces a great number of titles, but also that those titles represent an unusual range of different authors, that the printer

⁴⁴Blayney, *The Texts of King Lear*, 27.

works with a surprising variety of publishers, and that his books can be found in multiple shops. The ranking above makes it apparent that Okes is an exceptional figure, with more than twice as many connections as the man ranked seventh on the list, Edward Alnde, who is today probably better known, thanks to his penchant for printing plays, including the first, “bad quarto” of *Romeo and Juliet* and others by Thomas Kyd, Christopher Marlowe, and Thomas Dekker.

But Alnde is still one of the top ten most connected figures in the early modern print network, and to get a true sense of just *how* exceptional Okes really was, it may help to consider a chart of “average degree” across the entire print network during this time.

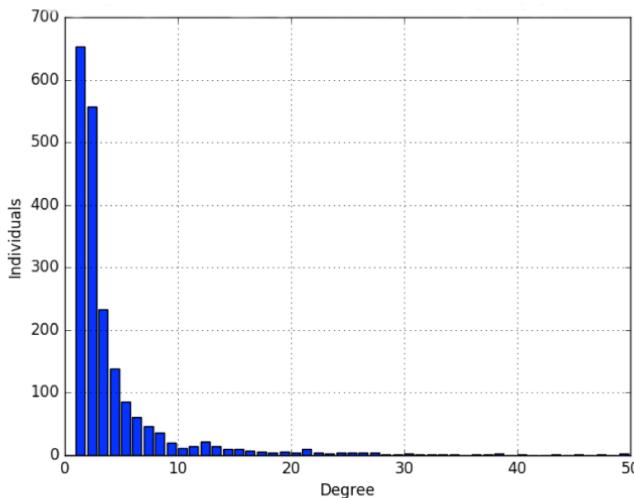


Figure 21. Degree Distribution of Individuals in the English Print Network, 1564-1623.

The chart above shows the print network between 1564 and 1623 follows typical power law behavior, and that the vast majority of individuals in the network have fewer than ten connections. Okes is far out in the long tail of anomalous “superconnectors” who form the hubs in the early modern print network.

Rather than asking whether Okes is merely “of some interest in the wider context of Jacobean play printing,” we should then consider what makes him such an outlier even among highly connected printers, and how *Othello* figures in his uniquely expansive web of connections. Traditional book history may offer some clues. As Blayney notes, “the majority of Okes’ books” were small pamphlets, news items, and ephemera “of a kind which could have been expected to sell

fairly well.”⁴⁵ Entrepreneurial in the extreme, Okes sought out work that was timely and could be turned around quickly in response to contemporary events and market demands.

He also sought out clients like his connection John Budge - who was himself one of the ten most connected booksellers during this period, an early member of the Virginia Company, and the person charged with buying books to supply the colonists in that company. Among the publications that Okes printed for Budge and others we find many that clarify the LDA topics associating Moorish identity in *Othello* with global (and especially Dutch) trade and commodities. At almost exactly the same time he printed *Othello*, for example, Okes also printed *An Answere to the Hollanders Declaration Concerning the Occurrents of the East-India* (1622), which shows up in the same cluster of “Moor” texts. This was part of a flurry of corantos, or newsletters, that had been published to detail a conflict with the Dutch over the Banda Islands, which were and are known for nutmeg and other spices. *A Courant of Newes from the East India* was published on 8 February 1622, relating the story of a Dutch invasion of an English settlement, in which the Dutch “sacked our house, took away all our goods, murthered three of our Chinese servants, bound the rest (as well English as Chinesses) hand & foote...[and] tumbled them down over the rockes like dogs.”⁴⁶ *A Second Courante of Newes from the East India* was published on 28 February and contained a series of letters detailing further Dutch atrocities, and asking “Is this the recompence of our love and bloud shewed unto you, and shed for you, to keepe you from the suppos'd thraldome of Spaine?”⁴⁷ The Dutch replied, claiming they held rights to all the Island’s “Nutmegs and Maces,” and this led to Okes printing *An Answere to the Hollanders Declaration*. The tract continues the he-said-she-said in a way that strikingly parallels the action of *Othello* itself. The tract scandalously claims that the master of the Dutch ship that first claimed the island, “one Chirke,” was “a Cuckold before he was a Christian, for being married in *Holland*, he left his wife with his familiar friends, who did out of their familiar love encrease the family in the Husbands absence.”⁴⁸ The tract continues to press the invalidity of the Dutch claim by undermining its agent, stating “it was two or three years after that Chirke was christned. Such Christians may quickly turne Moores who delay Baptising ’till thirty five.”⁴⁹ The Dutch in this tract are the true Others, brutally suppressing the English and natives. The cultural ground on which this suppression plays out — adultery and cuckoldry, religious conversion and hypocrisy,

⁴⁵ Blayney, *The Texts of King Lear*, 52.

⁴⁶ *A Courante of Newes from the East India* (London, 1622), 2.

⁴⁷ *A Second Courante of Newes from the East India in Two Letters* (London, 1622), 2.

⁴⁸ Bartholomew Churchman, *An Answere to the Hollanders Declaration* (London, 1622), 5.

⁴⁹ Churchman, *An Answere to the Hollanders Declaration*, 5.

murder and deception — would have been familiar to any early reader of *Othello*.

The point, however, is not to argue that this Dutch dispute should replace those readings of *Othello* that would situate it in terms of Spanish-Catholic conflict or Ottoman aggression. Rather, the play participates in a culture of global news, information, and entertainment, and the slim, inexpensive 1622 Quarto (in contrast with the substantial and costly 1623 Folio) especially must be read in a context where its geographical and mercantile aspects resonated just as strongly as its ethnographic and religious ones. In the Quarto, which lacks the most inflammatory language of racial difference, much of the drama of the opening scenes derives from the transmission of news itself:

Duke: There is no composition in these news
That gives them credit.

First Senator: Indeed, they are disproportioned.

My letters say a hundred and seven galleys.

Duke: And mine a hundred-forty.

Second Senator: And mine two hundred.

But though they jump not on a just account —

As, in these cases, where the aim reports
'Tis oft with difference — yet do they all confirm

A Turkish fleet, and bearing up to Cyprus. (I.iii.1-8)

This sort of ambiguity was a structural feature of early corantos, Marcus Nevitt has argued, as “the end of each issue willfully left its customers unsatisfied, pitched uncertainly on the edge,” and “skepticism thus became a key weapon in the newsmongers’ quest to secure a regular paying audience.”⁵⁰

In 1622, *Othello* became “the first Shakespeare play to be newly published in more than a decade” in part because it participated in this emerging news culture in an utterly timely way and because both its printer and publisher were ambidextrous “connectors” bringing multiple discourses into conversation for a quick profit.⁵¹ Okes and Walkley may have recognized that this play about a “valiant Moor” was a vendible commodity precisely for the thematic threads that our LDA models

⁵⁰ Marcus Nevitt, “Ben Jonson and the Serial Publication of News,” *News Networks in Seventeenth Century Britain and Europe*, ed. Joad Raymond (Abingdon: Routledge, 2006), 55.

⁵¹ McMillin, “Introduction,” 15.

suggest — naval journeys, news of military conflicts, and travelers' tales that include both exotic people such as "cannibals" and objects of purely geographical fascination: "deserts idle, / Rough quarries, rocks, and hills whose heads touch heaven" (I.iii.47, 139-40).

While *Othello* is unusually "complex" in the way it weaves these strands together, compared with other Shakespearean tragedies or with plays by contemporaries, the cluster of King's Men plays published by Oakes and/or Walkley from 1619 to 1622 share this investment in news and global culture. *The Tragedy of Thierry and Theodoret* (1621) depicts a court that is thrown into turmoil by "daily Libels, almost Ballads, / In every place, almost in every Province" (I.i.63-4), and when the prince is poisoned (with his mother's handkerchief!) doctors bring goods from around the world to heal him, including "more cooling opium then would kill a turke" (V.ii.12). The first Quarto of *Philaster* (1620) published by Okes and Walkley (but not the second quarto and most modern editions) begins with the question:

Come gallants, what's the newes,
the season affords us variety,
the novilists of our time runnes on heapes,
to glut their itching eares with airie sounds,
trotting to'th burse; and in the Temple walke
with greater zeale to heare a novall lye
then a pyous Anthum tho chanted by Cherubins. (I.i.9-15)

Othello and these other plays surely appealed to Walkley and Okes for a variety of reasons: works by Shakespeare and the King's Men were popular and already had a certain literary prestige, as evidenced by the capital intensive publication of the Folio in 1623, which was years in the making. But that book's publishers, William Jaggard and his son Isaac, were never as extensively connected through collaboration and shared printing as Okes in our analysis of the early modern print network because their operation was always more centralized and stable, capable of taking the long view and cultivating literary legacies that aspired very specifically to be "not for an age but for all time," as Ben Jonson wrote in the First Folio. But in 1619-22, both our topic modeling and our network analysis points to *Othello*'s identity — as a soldier, as a global traveler, as part of an exploration of the global geography and culture — as part of the play's appeal to a printer and publisher more reliant on contemporary events.

Conclusion

At the moment of its initial print publication, *Othello* participated in two distinct slices of the marketplace of books and of ideas about race and globalism in the Renaissance. Pivoting between the topic modeling of the full text data and the print networks of the metadata shows us both how the geographical understanding of space shaped an important strand of the discussion about race, and how the conversation about Moors was mediated by the print networks responsible for the production and dissemination of these ideas.

Othello's role in the English discourse of the Moor changed dramatically after the publication of the Folio in 1623. Shakespeare's text became a touchstone in the articulation of English's racial imagination in the expansion of its colonial ambitions. It did not simply reflect the racial attitudes of the seventeenth century but assumed the role of a foundational text setting the very terms upon which Englishmen could think and speak about England's place on an increasingly global stage. Analysis of English texts in the Folio's aftermath, shown in figure twenty two, shows that as the seventeenth century progressed, topics invoking the actual editions of *Othello* consistently participate in the discourse of "complexion" and geography, with the models including the proper names "Othello," "Desdemona," "Iago," and "Shakespear," alongside the "Tartar" and the "Indian" and places like "Florida," "Jordan," "Arabia," "Persia," "Ireland," and of course, "Venice."

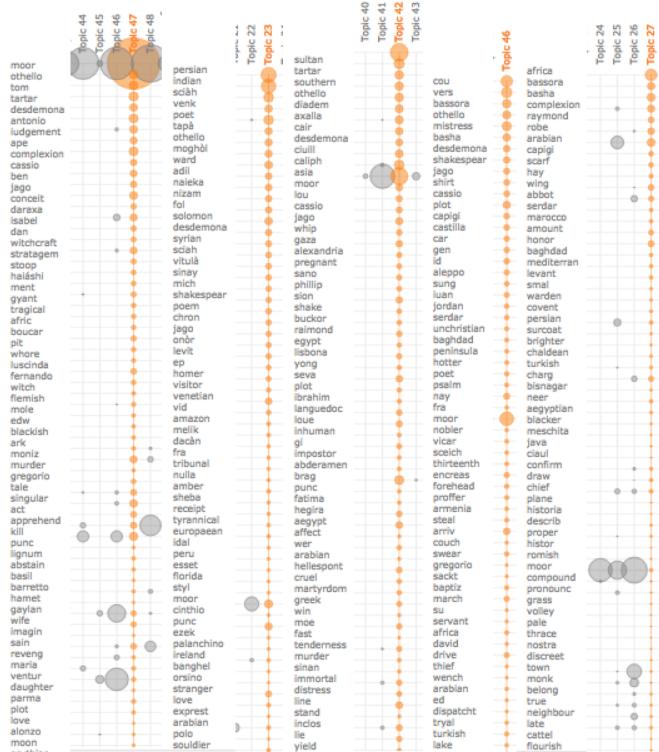


Figure 22. Topics Including or Mentioning Othello after 1623.

What is remarkable in the texts composing these later Othello topics is the extent to which the play's characters, who have little to do with India or Tartary, are routinely plucked from the Mediterranean and Venetian context so as to be used as a portable racial heuristic used to demystify foreign geographies and cultures and to imagine a global network of trade. For example, the 1672 *Two Broadsides Against Tobacco*, containing King James' polemics about trade, rails against tobacco and coffee as corrupting commodities, describing the relationship of "coffee, a kind of Turkish Renegade" that is "joynd" in a "match with Christian wa-ter." The extended anthropomorphism of this unholy romance hinges on a cli-mactic moment of violent frisson between the two, as "sure he suspects, and shuns her as a Whore, / and loves, and kills, like the Venetian Moor. / Bold Asian Brat!"⁵² These topics demonstrate *Othello's* viral quality in late seventeenth-

⁵²James I, *Two Broadsides Against Tobacco the first given by King James of famous memory, his Counterblast to tobacco : the second transcribed out of that learned physician Dr. Everard Maynwaringe*

century conversations defining England's position in an increasingly dense network of geographies, cultures, commodities, and colonies. This reception of Shakespeare's dramatic text precisely matches the conventional racialized understanding of *Othello* that we have inherited through the First Folio.

Far from flattening the complexity of the literary field into a two-dimensional matrix of numbers, we propose that the digital methods employed here are useful for teasing out layers of latent historicity in our reading strategies.⁵³ Our results suggest that the focus on the body as the measuring stick of racial ideologies - sexual, anatomical, religious, political, or otherwise - should be understood as an invention of a colonialist worldview that did not exist in the same way at the time of Shakespeare, Oakes, and Jaggard, but which did come to define their later reception. Tracing the history of race in the early modern era through influential texts like *Othello* opens up a critical space to reanimate historically significant but unfamiliar models of race that we have lost in the postcolonial world. From this new vantage point, we may have the power to articulate alternative non-essentialist vocabularies, using Shakespeare's global text to rethink the idea of ethnic difference in today's globalized - and increasingly racialized - society.

(London, 1672), 58-59.

⁵³This subtlety is precisely what Andrew Goldstone and Ted Underwood suggest in "Quiet Transformations of Literary Studies: What Thirteen Thousand Scholars Could Tell Us," *New Literary History* 45 (2014), 360.